CORRECTED MATRIX (7/28/03)
Maine DEP

Treatment Step Options for Androscoggin River Point Sources.

Options	Compliance of Dissolved Oxygen Criteria 5ppm and 6.5ppm 30 day ave.			Maximum Algae Level (Chl-a in ppb)	Technology	Cost	Accrued benefits/losses outside of GIP		
	(Depth in ft)	% of Model Pond Volume	% of Coldwater Habitat	(GPA criteria of 8 ppb represents bloom condition)			Aquatic life	Recreation	Economic value
1. No changes to point source waste discharge licenses. BOD TSS TP[4] Fraser 13400 28200 164 Mead 12000 32900 241 IP 10900 38350 298 Munis 1837 1837 267 Continue operation of GIPOP1.	0	28%[1]		19ug/l	**None**	**$0**	Non-attain for 38 mi above GIP at 6.5ppm 30 day av.	Algae blooms	
1A. No changes to point source waste discharge licenses. BOD TSS TP[4] Fraser 13400 28200 164 Mead 12000 32900 241 IP 10900 38350 298 Munis 1837 1837 267 Continue operation of GIPOP1. Add GIPOP2 at Lower Narrows. Total O2 injection = 105,000 ppd	0	52%		19ug/l	**Due to cost to IP, Wausau would see an increase in eff. Charges from IP**	**$55,000**	Non-attain for 38 mi above GIP at 6.5ppm 30 day av.	Algae blooms	
2. Reduce point source waste discharge licenses to actual[5] levels of BOD/TSS/TP. BOD TSS TP Fraser 10200 11000 148 Mead 6300 10100 220 IP 4300 15200 268 Munis 510 715 121 Continue operation of GIPOP1.	30 [2]	80%		17ug/l	**Pre-treatment with a vertical filter system**	**$350,000**		Algae blooms	

3. Reduce BOD/TSS of point source waste discharge licenses to actual[5] levels. Reduce actual point source phosphorus by 1/6. BOD TSS TP Fraser 10200 11000 123 Mead 6300 10100 183 IP 4300 15200 223 Munis 510 715 101 Continue operation of GIPOP1.	35 [3]	82%		15ug/l	**Pre-treatment with a vertical filter system**	**$350,000**		Algae blooms	
4. Reduce BOD/TSS of point source Waste Discharge Licenses to actual levels. Reduce actual[5] point source phosphorus by 1/3. BOD TSS TP Fraser 10200 11000 99 Mead 6300 10100 146 IP 4300 15200 179 Munis 510 715 81 Continue operation of GIPOP1.	40 [2]	85%		12ug/l	**Pre-treatment with a vertical filter system**	**$350,000**		Algae blooms	
4A. Reduce license BOD/TSS discharge by 20%. Reduce actual[5] point source phosphorus 1/3. BOD TSS TP Fraser 10720 22560 99 Mead 9600 26320 146 IP 8720 30680 179 Munis 1470 1470 81 Continue GIPOP1. (April 15 memo)	0	53%		12ug/l	**Pre-treatment with a vertical filter system**	**$350,000**	Non-attain for 38 mi above GIP at 6.5ppm 30 day av.	Algae blooms	
4B. Reduce license BOD/TSS discharge by 20%. Reduce actual[5] point source phosphorus 1/3. BOD TSS TP Fraser 10720 22560 99 Mead 9600 26320 146 IP 8720 30680 179 Munis 1470 1470 81 Continue GIPOP1. Add 2nd GIPOP at Lower Narrows. Total O2 injection = 105,000 ppd.	0	76%		12ug/l	**Pre-treatment with a vertical filter system**	**$350,000**		Algae blooms	

5. Reduce BOD/TSS of point source Waste Discharge Licenses to actual[5] levels. Reduce point source phosphorus by 50%. BOD TSS TP Fraser 10200 11000 74 Mead 6300 10100 110 IP 4300 15200 134 Munis 510 715 60 Continue operation of GIPOP1.	45 [3]	89%		10ug/l	**Install pre-treatment system, add phosphate removal**	**$500,000**		Algae blooms	
6. Reduce BOD/TSS of point source Waste Discharge Licenses to actual[5] levels. Reduce point source phosphorus by 67%. BOD TSS TP Fraser 10200 11000 49 Mead 6300 10100 73 IP 4300 15200 89 Munis 510 715 40 Continue operation of GIPOP1.	50 [2]	93%		8ug/l	**Install pre-treatment system, add phosphate removal**	**$500,000**			
7. Reduce license BOD/TSS of point source Waste Discharge Licenses to actual[5] levels. Reduce actual[5] point source phosphorus by 40%. BOD TSS TP Fraser 10200 11000 89 Mead 6300 10100 132 IP 4300 15200 161 Munis 510 715 73 Continue operation of GIPOP1. Add 2nd GIPOP at Lower Narrows. Total O2 injection = 98,000 ppd.	55 [3]	96%		11ug/l	**Install pre-treatment system, add phosphate removal**	**$400,000**		Algae blooms	
8.									

8. Reduce BOD/TSS of point source Waste Discharge Licenses to actual[5] levels. Reduce actual[5] point source phosphorus by 1/3. BOD TSS TP Fraser 10200 11000 99 Mead 6300 10100 147 IP 4300 15200 179 Munis 510 715 81 Continue operation of GIPOP1. Add 2nd GIPOP at Lower Narrows. Total O2 injection = 135,000 ppd.	60 [2]	99%		12ug/l	**Install pre-treatment system, add phosphate removal**	**$400,000**		Algae blooms	
9. Reduce BOD/TSS of point source Waste Discharge Licenses to actual[5] levels. Reduce actual[5] point source phosphorus by 40%. BOD TSS TP Fraser 10200 11000 89 Mead 6300 10100 132 IP 4300 15200 161 Munis 510 715 73 Continue operation of GIPOP. Add 2nd GIPOP at Lower Narrows. Total O2 injection = 105,000 ppd.	60*	99%		11ug/l	**Install pre-treatment system, add phosphate removal**	**$400,000**		Algae blooms	
10. Zero discharge from mills. Discontinue GIPOP1.	20	68%				**CLOSE MILL**			
11. Zero discharge from mills. Continue GIPOP1.	60	99%				**CLOSE MILL**			
12. Zero discharge from mills. Continue GIPOP 1. Add 2nd GIPOP at Lower Narrows. Total O2 injection = 105,000 ppd.	70	100%				**CLOSE MILL**			
13. No changes to point source waste discharge licenses. BOD TSS TP[4] Fraser 13400 28200 164 Mead 12000 32900 241 IP 10900 38350 298 Munis 1837 1837 267 Discontinue GIPOP1. Remove Gulf Island Dam.	N/A		N/A		**NONE**	**$0**	Non-attain for 38 mi above GIP at 6.5ppm 30 day av.		

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1 Non-attainment of DO criteria at water surface above GIPOP1. Below GIPOP1, the added oxygen result in some attainment near surface.
Values for Model Pond Volume does not include shallow embayments, therefore, percentile is underestimate of total water not in attainnment.
2 Some non-attainment of DO criteria is predicted by water quality model in a small area diredtly upriver of GIPOP1 above this depth.
3 Non-attainment estimates obtained by interpolation of model runs at 10' depth intervals.
4 “Licensed” TP estimated as discharge of phosphorus at full licensed flow and measured concentration.
5 “Actual” values are based on measured effluent values collected during the time of model development.